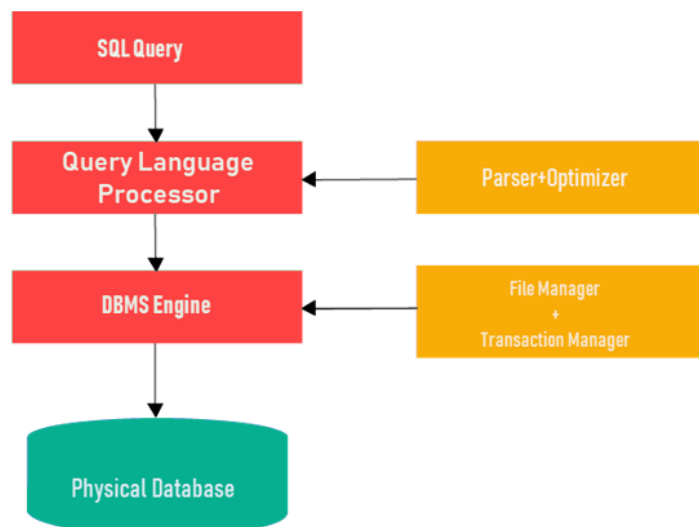# Quiz 2 Memo

Date: 14-05-21

Question 1 Answer [2 Marks]

A query language like SQL is expected to be a Programming language because it is not general-purpose programming language?

Turing Complete

Question 2 Answer [4 Marks]

In your own words kindly explain what is meant by "Schemas of input relations for a query are fixed but queries will run regardless of an instance!"

The statement relates and reiterates the fact that "When a query is applied to relation instances, and the result of a query is also a relation instance".
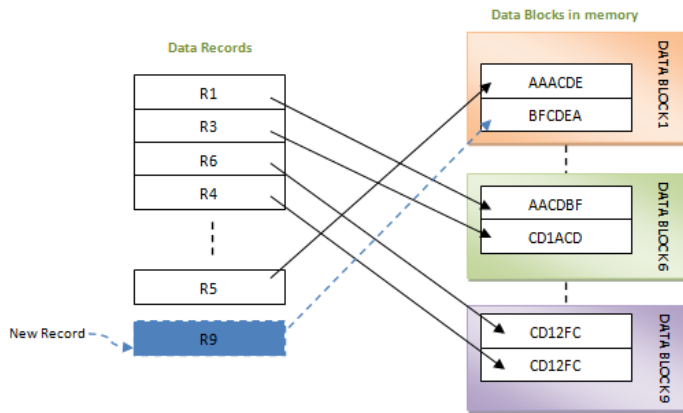
Question 3 Answer [2 Marks]

The _____ is able to take two relations and return all different combinations of tuples which share an attribute name, without duplicating their shared attribute.

Natural Join

Question 4 Answer [4 Marks]

In your own words kindly explain why in order for us to successfully build clustered indexes we must first need to sort out the Heap file?

As the word describes it that it is a clustered index which means we will need to involve sorting as an extra activity by dividing data entries into clusters and placing them in organized buckets of the heap to form data records. This is also done in order to make sure the indexes reference the correct data.

Question 5 Answer [3 Marks]

In your own words using an example kindly explain what is the primary difference between a relation-list and a target-list?

a relation list is a list containing range variable relation names

a target list is a list of all the attributes of a relation list

a target list contains a list for all the attributes for all the relations that a single relation list contains

example

Select name,surname,dateofbirth

from students

"name,surname,dateofbirth" = target-list

"students' = relation-list

Question 6 Answer [4 Marks]

Given the following example of range selection kindly explain what will be the effect of replacing S.sid by S.sname in the SELECT clause?

SELECT S.sid
FROM Sailors S, Reserves R
WHERE S.sid=R.sid

By changing "S.sid" to "S.sname" in the select clause of this SQL statement will result in the same amount of output but with the difference begin that the output from the SQL statement will not display the ids of sailors that are both the sailors and reserves table but instead will display the names of the sailor.

The reason this SQL statement will still work is that only the select clause is changed not the where clause

SELECT S.sname
FROM Sailors S, Reserves R

WHERE S.sid = R.sid

Question 7 Answer [2 Marks]

The _____ is then applied to eliminate some groups. However, these expressions must have a single value per group.

group-qualification

Question 8 Answer [4 Marks]

Kindly explain what does the following linear algebra expression does?

$$\text{let } T = \rho_{sid.1:=sid} \, (\pi_{sid.1,sname,bid} \, (\text{Sailors V Reserves}))$$
$$\text{in}$$
$$\pi_{sname.1} \, (\sigma_{sid.1=sid.2 \wedge bid.1 \neq bid.2}(T \times T))$$

The linear algebra expression finds the names of all the sailors who have reserved at least two boats.

Question 9 Answer [3 Marks]

In your own words and using an example kindly explain the difference and how a disjoint constraint, overlapping constraint and covering constraint affects database design?

overlapping constraints = in a database design an overlapping constraint allows an entity to belong to more than one single lower-level entity

covering constraint = in a database design a covering constraint determines if all entities of the lower level collectively include all the entities of a higher level entity

disjoint constraint = in a database design a disjoint constraint does not allow an entity to belong to more than one lower-level entity.

Example:

Superclass = vehicle
Subclasses = bus and train

overlapping = When vehicle can be both a bus and a train
disjoint = When a vehicle can only be a bus or a train
covering = When bus and train are both a type of vehicle

Question 10 Answer [2 Marks]

The CREATE _____ statement names a new Constraint and defines the Constraint's deferral mode which also include its initial constraint check time and its CHECK search condition.

ASSERTION

[Total: 30 Marks]